

Operational Media

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Over the past several decades in computationally-driven cultures, we have witnessed the emergence of increasingly networked and automated apparatuses of engagement that are used for security, combat and navigation. These are strategic applications that facilitate distributed fields of intelligence and agency. We might recognize them at work when we see calculations and computer graphical overlays on screen-based representations of events, or luminous portable information scrims that hover between viewer and world.

Integrated into all manner of strategic informational displays – whether used for entertainment, communication, or locationing, by the military, policing, or civilian sectors – these media have in turn been integrated into a contemporary regime of spectacle. They are visible everywhere as part **of a machine-aided process of disciplinary attentiveness, embodied in practice, that is bound up within the demands of a new production and security regime.**

The enabling premises of such “operational media” can be found in the 1940s WWII wartime sciences of operations research, game theory, and cybernetics. The ground was laid for its emergence in the 1950s, when the development of computing became allied with the communication, command, simulation, and control imperatives of the Cold War. Its two primary forms – the real time tracking interface and the distributed interactive simulation – were shaped by technological demands and the symbolic-communicative practices of wartime production. At the same time, such media has helped shape new economies of organization, optimization, and vigilance.

As a conceptual and material apparatus of engagement, operational mediation has always been about the detection and strategic codification of movement, and the development of maneuvers of strategic positionality. Against many of the orientations of virtual discourses over the last decade, which have often situated virtuality in terms of delocalization and disembodiment, its tradition is one of precise locational and temporal specificity. In this sense, operational media can be thought to serve as a

reaffirmation of positionality and place. It plays an important role in the resurgence of temporal and locational specificity witnessed in new surveillance and location-aware navigational technologies.

Historically, operational mediation has always been dependent on the formal modeling of closed systems and the development of highly sophisticated scenario planning techniques, which are privileged at the expense of situated, experiential knowledge. It has always been oriented toward an ideal of integrated control and panoptic oversight, where external reality is seen as manageable through the application of abstracted calculations and strategies. In this sense it is inherently **protective** and **agonistic**, coalescing against a field of potential threat, whether scripted in terms of danger or inefficiency.

Yet, at the same time, the operational assemblage is fundamentally about **acquisition**. Propelled by a libidinous, suspicious, and supervisory gaze, its objects are those which are to be managed or owned. It is fueled by the demands of efficiency and vigilance, moving toward real time engagements and continuous, heightened states of alertness and preparedness, whether for protection or libidinous consumption. It is not only driven by security and productivity, but of convenient access to desired objects. As a technological-semiotic support, it blends combat and commodity, functioning as a link between war and consumerism.

This essay is about a unique modality of the spectacle that has emerged in this era of new security machines and mobile apparatuses of engagement.

Orientations of Integration and Control¹

Out of his studies in feedback mechanisms, communication technology, and nonlinear processes, Norbert Wiener coined cybernetics in 1947 to designate a new science of control mechanisms that relied on the exchange of information. These were fundamentally mechanisms of control rather than simply those of exploration: for Wiener, power and control were absolutely central to the very foundation of the practice. However, this was not a centralized form of control, nor a static one. Objects were seen as flexible, self-regulating control-communication *systems* that were able to correct, in the course of their functioning, both their performance and the rules governing their performance. The object regulated and controlled itself based on feedback from the system. It was a machine that could learn.

Weiner's anti-aircraft predictor was an example of such a device. It was developed to determine, several seconds in advance, where an enemy aircraft would be and to use that information to direct artillery fire. Today's self-regulating weapon is its descendant.

¹ My discussion of cybernetics owes a large debt to N. Katherine Hayles and Peter Galison, whose work is essential on the subject. See N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* University of Chicago Press, 1999, pp. 84-112, and Peter Galison, "The Ontology of the Enemy: Norbert Wiener and the Cybernetic Vision," *Critical Inquiry* 21:1, Autumn 1994, pp. 228-266. See also Peter Galison, "War Against the Center," *Grey Room* 04, Summer 2001, pp. 6-33.

In cybernetics, both ally and enemy were so merged with their technology that the distinctions between human and machine were blurred. Soldier, airplane, calculator, and firepower were merged into a single integrated system. However, ally and enemy were not part of the same system but were fundamentally two different feedback mechanisms in opposition. In this sense cybernetics (as well as operations analysis) was always dealing with a world of confrontations and oppositional tactics. The enemy was a probabilistic system that could be *countered* using cybernetic tools and methods, which involved statistical methods and fast, mechanized computing methods to solve these statistical problems. It was a fundamentally agonistic calculus of tactical moves and countermoves.²

This agonistic calculus involved the construction of strategies, systems, and weapons that tie humans and technologies together through flows of information and issues of symbolic processing, positioning the body and mind in terms of an integrated, information processing system. It gradually became the prototype for a new understanding of the human-machine relation. Within the context of industrial wartime, it was elevated into a general philosophy of human action.

Cybernetics was a circuit-reductionist model where behavior was always understood as purposeful and intentional. Both ally and enemy were fundamentally rational and calculating entities that played on a mechanized battlefield, well-versed in strategy, tactics, and maneuver. Humans and objects could only be known in terms of their observable functions. Under the gaze of such inquiry, human intentionality was the same as the self-regulation of machines.³ That which was exhibited in the human realm but was not observable or operationally useful in science (such as non-purposeful behavior) was neglected. In this “black-box” conception of human nature, where behavior is defined in terms of broad classes of actions based on input and output, there is no way of dealing with the full depth and complexity of human interaction. Human behavior is reduced to moves of pursuit, escape, and deception. An abstract level of pattern is emphasized over a uniquely embodied particularity.

As clusters of tools, procedures, and metaphors, technologies configure a platform for discourse and ideology. Such a technical-discursive ensemble is modifiable through politics, yet it has political orientations built into its system. It is not only the technology and its use, in other words, but the assumptions and orientations that come bundled with it.⁴ To what extent is this essential confrontational and agonistic nature of cybernetics and its circuit-reductionist models of behavior, “hardwired” into its descendants today? In cybernetic control theory, control systems beget other control systems. As Katherine Hayles points out, “envisioning different kinds of exchanges demanded different kinds of control mechanisms, and constructing new

² Galison, “The Ontology of the Enemy,” p. 233.

³ Ibid, p. 246.

⁴ I owe many of these insights to Paul N. Edwards and his brilliant study of the role that computing has played in the “closed world” orientation of the Cold War era and its aftermath. Paul N. Edwards, *The Closed World: Computers and the Politics of Discourse in Cold War America*. MIT Press, 1996.

control mechanisms facilitated the construction of more exchanges in that mode.”⁵ To what extent have its enabling premises replicated?

One could ask the same questions of computing in general. Cybernetics and its companion wartime sciences were themselves driven by the systematic, logical rules of computing, where it is understood that everything – warfare, ground realities, markets – can be formalized, modeled, and managed. Reality is figured as mathematical and “capturable” through a formal programming logic. It can be thought to have contributed to an experience of the world as a predictable, manipulable entity, leading to a sense of dominance over the future.⁶

One could suggest three intersecting areas, descending from cybernetics and its companion wartime sciences, that are bundled into operational media from the start. **First**, the perpetuation of an idealist orientation where humans have no access to unmediated reality and the world is actively constructed in terms of relational information systems. Here the world is scripted as inherently controllable, filtered through a scrim of information that modifies both system and materiality. **Second**, following from the first, is an emphasis on data patterns over essence: an ever-greater abstraction of persons, bodies, and things, and an emphasis on statistical patterns of behavior, where the populace is pictured as a calculus of probability distributions and manageable functions. **Third**, a fundamentally agonistic orientation, deriving from a world built on confrontation and oppositional tactics, of tactical moves and countermoves.

Such pathways are dimensions of media development, whether militaristic or not. They flow into the worlds of science, marketing, and videogaming, for example. A sense of mastery is generated through the contemporary popular media, where the spectator is infused with an artificial sense of control over the machine and an exterior world represented on the screen. Within the perfect world of the operational system, reality is subsumed within the dictates of the interface. An unruly or unproductive situation is dominated, over and through the technology, and a de facto power relation is established between observer and observed.

This tradition has been motivated by, and participated in the construction of, an imagined enclosure of global panoptic oversight – a “full spectrum dominance.”⁷ In 1997, the Chief of Staff of the US Air Force predicted that by the year 2000, “we shall be capable of finding, tracking, and targeting virtually in real time any significant element moving on the face of the earth.”⁸ The operational impulse is about acquiring

⁵ Hayles, p. 91. Hayles points to James R. Beniger, in *The Control Revolution: Technological and Economic Origins of the Information Society*. Harvard University Press, 1986, who shows how technologies of speed and communication precipitated a “crisis of control” that, once solved, initiated a new cycle of crisis.

⁶ Edwards, p. 1-15.

⁷ “Full Spectrum Dominance” is the key term in Joint Vision 2020, the blueprint the United States Department of Defense. See <http://www.defenselink.mil>.

⁸ General Fogelman, speaking to the House of Representatives, cited by Paul Virilio in *Strategy of Deception* (Verso, 2000), pp. 17-18, from an article by F. Filloux entitled “Le Pentagone la t_e dans les etoiles” in *Liberation*, 20 April 1999.

a position of mastery through an omniscient distribution of the gaze: a controlling gaze that is everywhere yet nowhere, and which acquires power solely because of this amorphousness.

Moving through a world of information and communications technology, information is increasingly seen as more essential than that which it represents. Pattern is privileged over presence.⁹

The Real Time Tracking Interface

The twentieth century was driven by the race to eliminate time delays of all sorts – between actions and displayed results; between the time of traveling between distant points; between sent messages and received responses; between observation and engagement. One could see the entire history of both military development and industrial production as having been driven, in one way or another, by the need for advance detection and *knowledge-action-time*. It was driven by the sense that only advanced technological systems are capable of dealing accurately and consistently with the calculations and extremely complex demands of battle situations – particularly within potentially devastating warfare scenarios, when there is thought to be no time for human intervention and error.

The real time interface coalesced out of the demands of war and production. As Lev Manovich points out, it was radar that offered the mass employment of this fundamentally new type of screen – the screen of “real time” – which will gradually come to dominate modern visual culture.¹⁰ Radar was the first real time tracking technology. Much of its development occurred in the early 1940s during the War, due to its rapid abilities at gathering volumes of information. It generated so much information that crews had to reorganize and accelerate their way of working in order to keep up with its pace. The real time interface, then, brought with it demands for its acclimation, generating new patterns of organization, attentivity, and action.

The first large-scale, computerized command, control, and communications system was SAGE, established in the mid-1950s. It was created to link together radar installations around the perimeter of the U.S., analyze and interpret their signals, and direct intercepting jets toward incoming objects. As Paul Edwards shows, SAGE unleashed a wave of command-control projects from the late 1950s onwards, which eventually formed the core of a worldwide satellite, sensor, and communications web geared for global oversight and instantaneous military response.¹¹ It is within this web that the forms and ideologies of tracking arose – as well as working methodologies and rhythms, forms of interface and engagement. **It is within this “total system,” intertwined with the cybernetic tradition of integration, that operational media began to coalesce, along with the forms of organization and attention**

⁹ Hayles, p. 19.

¹⁰ Lev Manovich, *The Language of New Media*. MIT Press, 2001, pp. 95-101.

¹¹ Edwards, pp. 75-111.

that were appropriate to it. It was coincident with, and driven by, logics of production, self-optimization, and vigilance.

Consider a contemporary example. A soldier on the ground in Iraq calculates coordinates for a strike using laser binoculars and a GPS device. He transmits them via satellite to the Joint Operations Center in Qatar. Command personnel in Qatar check the information against digital maps made from satellite photographs, determine the coordinates for the strike, and then relay the coordinates via communications satellite to the pilot of a B-2, into whose missile guidance system they are fed. The launched missile is corrected in flight by a GPS satellite.

Plans are currently underway for the development of a “Global Information Grid” – a secure, wireless network that will fuse US military and intelligence services into one unified system, making volumes of information available instantly to all military and intelligence actors. Proponents say that it will become the most lethal weapon in the US arsenal and change the military and warfare the way that the Internet changed business and culture. The consortium established to build the “war net” includes a who’s who of military contractors and technology innovators: Boeing, Cisco Systems, General Dynamics, Hewlett-Packard, Honeywell, IBM, Lockheed Martin, Microsoft, Northrup Grumman, Oracle, Raytheon, and Sun Microsystems. According to the chief executive of Lockheed Martin, this system will allow every member of the military to have “a God’s eye view” of the battlefield.¹²

According to Virilio, the real time interface has replaced the interval that once constituted and organized the history and geography of human societies. Problems of spatial distance have been supplanted with problems of the time remaining.¹³ One could say, then, that operational media is motored by the need for an instantaneity of action, where time delays, spatial distances, and “middlemen” are reduced through computational systems that facilitate the sharing of human and machinic functions. One can see the emergence of “unmanned” vehicles in this light, especially those that are armed: they are constructs that are shaped, in system and in material form, by the drive to collapse the distance between sensor, analyst, and shooter, through various systemic adjustments and relocations.

A new form of agency emerges within this coordination and command network, spanning spatial distance and merging information from multiple sources. A combinatory field of perception arises within a distributed field of shared functions.

This intertwining of human and machinic capacity, in the generation of a combinatory field of perception, is part of the historical development of media itself. In cinema, the spectator and the cinematic apparatus are mutually dependent in the act of conducting representation. One must be trained to behave and see in accordance with the conditions of the device. The viewer is immobilized and sensitized to a language of movement through which an extensive world is understood. The human becomes reliant upon the apparatus that populates its field of vision, adjusting to the rhythmic codes of its conveyance, as the apparatus is reliant upon the sensorium of

¹² “A Network of Warfighters to Do Battle in 21st Century Conflicts,” New York (AFP) Nov 13, 2004, from SpaceDaily.com, 15 Nov 2004. Thanks to Irving Goh for this forward.

¹³ Paul Virilio, *Open Sky*, trans. Julie Rose, Verso, 1997, pp. 10, 19, 30.

the viewer for its actualization. A perceptual capacity and a signifying apparatus emerge through an integration of human and machine.¹⁴

We can say that, in a spectatorial situation, a subject is “distributed” within a field of engagement determined through technological systems of communication, storage, sorting, and retrieval, contoured under the social and institutional construction of knowledge. A viewing subject is linked or inserted into larger networks of seeing and linguistic meaning, and a decentered or multi-nodal self emerges. It is accompanied by experiences of disembodiment and incipient presence; experiences of mobility and translocality; experiences of prosthetic extension and liberation through machines. One can regard the history of popular media in terms of such technologized perception and presence.

As Ryan Bishop and John Phillips write, the integrative history of military technology – a history of prosthetic extension, especially that of sight – has been paralleled by the rise of mass media and its manipulation of vision to create illusions of simultaneity, movement, and depth. Each has produced instruments designed to collapse distance and time, aiming to close the gap between the perceiving subject and the visible world. The “problem” proposed by the gap of perception is solved by a return to a mythologized time of unproblematic perception.¹⁵ But the fundamental problem remains.

These histories are intertwined with that of automation, but they connect to a still larger migration of cognition. By the 1960s, for example, television was already on its way to becoming, as it has today, a machine for the automation of thinking. Reflecting the viewer’s own thought process, it develops its own conventions of simulated deliberation, absolving the viewer of the labor of decision-making¹⁶ – as when a laugh track allows one to maintain a relaxed composure while the machine assumes the labor of chuckling. At the extreme end is the figure of the “couch potato”, whose body is hollowed out by the apparatus as the televisual “smart image” assumes control.

Consider a recent news broadcast. A pilot is flying an aircraft during a combat situation in Iraq. It is flown jointly, by an operator in the cockpit as well as by operators on the ground. We are watching the scene as if through the cockpit window. Computer calculations are arrayed on the image-field. We see through the pilot’s eye, but we also see through the viewpoint of the larger command network in which the pilot is embedded. The pilot is one actor within a distributed agency that combines humans and machines. Our viewpoint is momentarily converged with that of the piloting agency. The clip ends, and a zoom out frames the image within a newsroom stage. A news anchor appears. She meets our gaze and addresses us in terms of a

¹⁴ Sean Cubitt, *The Cinema Effect*, MIT Press, 2004.

¹⁵ Ryan Bishop and John Phillips, “Sighted Weapons and Modernist Opacity: Aesthetics, Poetics, Prosthetics,” *Boundary 2*, 29:2, 2002, p. 158-9.

¹⁶ Eliane Scarry “Watching and Authorizing the Gulf War” in *Media Spectacles*, Marjorie Garber, Jann Matlock, and Rebecca L. Walkowitz, eds. (Routledge, 1993), 57-73, as cited in Margaret Morse, *Virtualities: Television, Media Art, and Cyberculture*, Indiana University Press, 1998, 36-67.

collective “we.” We are placed in position, momentarily aligned with this combinatory operator, sharing its perspective, hailed as subjects within its operational world.

For both the military and the civilian observer, there is no “time” for reflection. In the military realm, reflection adds time and space in which the target might slip away. It expands, not lessens, the gap between detecting and intervening, sensing and shooting. In the popular realm, slowness – the stuff of reflection and deliberation – is to be avoided, instantaneity prized. American media culture is one of impatience and immediacy. Reflection is distributed and automated – or as some would say, evacuated. We are however talking about a symbiotic relationship: both subject and object are mutually intertwined within the combinatory human-machinic realm.

The Distributed Interactive Simulation¹⁷

Already in the 1950s, researchers were using the technology developed for SAGE to create computer graphics programs that allowed direct input by touching the screen. The most famous of these was “Sketchpad,” designed in 1962 by Ivan Sutherland. It was at this point that the real time screen became interactive.¹⁸ Simulated three-dimensional worlds were subsequently developed in which users could “virtually” embody themselves, whether via a stationary screen or a movable head-mounted display.

Sutherland founded the first computer science program to focus on graphics and graphical interfaces in 1965. There were three standards that he set for this work. First, the display screen was to be considered a window, through which the user looks into a computer-modeled universe. This virtual world was to become so realistic that it would eventually become indistinguishable from a real world. Second, other sensory modalities should be included so that users find themselves fully present in a virtual world through sound, touch, and realistic sensations of embodied movement. Third, abstract representations should be able to be superimposed on an object, as in cartography, where information overlays a realistic depiction.¹⁹

Right from the beginning, industry played a large role in the development of interactive computer graphics. The entertainment industry, along with the military,

¹⁷ I owe a large debt to the extensive research of Tim Lenoir and Henry Lowood on the history of simulation technology and war gaming and the contemporary synergies between the military and the entertainment industry. Tim Lenoir, “All But War is Simulation: The Military-Entertainment Complex,” *Configurations*, Fall 2000. Tim Lenoir and Henry Lowood, “Theaters of War: The Military-Entertainment Complex” in *Kunstammer, Laboratorium, B_hne-Schaupl_tze des Wissens im 17. Jahrhundert*, eds. Jan Lazardzig, Helmar Schramm, and Ludger Schwarte. Berlin: Walter de Gruyter Publishers, 2003: 432-64. An earlier, more expansive version of this essay is available at http://www.stanford.edu/dept/HPST/TimLenoir/Publications/Lenoir-Lowood_TheatersOfWar.pdf.

¹⁸ Manovich, pp. 101-102.

¹⁹ Lenoir and Lowood, op. cit.

has been a major stimulus to its development. If there is a “military-industrial-entertainment” complex to be theorized, it was already at work in the 1960s. The desire for realism in computer graphical effects comes from a variety of sources, no less film, television, and fiction. It is no secret that developers of both videogames and military flight simulators have been influenced by films like *The Terminator* and novels like *Snow Crash*. It has been said that military funding has driven technological development, but it could also be said that it is the entertainment world that drives them both. Or, more accurately, they are both driven by a cultural imaginary, which is a composite of multiple narratives whether fact or fiction.

Abstract strategy games were always necessary in the history of warfare, providing important tools for testing operations and tactics. During the Cold War, increasingly powerful modeling and prediction technologies were needed in order to reach into the future and anticipate events. They were of vital importance since actual outcomes were too catastrophic to consider. Simulation was actively used in contrast to actual weapon technology that could not be used.

The 3-D simulation technologies developed before the 1980s were understood as stand-alone systems. Since the advent of large-scale information and communications networks, interactive computer graphics have increasingly been integrated into networked “distributed interactive simulations.” DARPA funding has been a major player in this work. One of the largest distributed interactive simulations was the DARPA-sponsored SIMNET, which began to be developed in 1983 and went operational in 1990. With such distributed battle-engagement simulations, virtual theaters of war are created that link multiple actors in real time. With the rapid development of this technology during the 1990s, content and compelling narrative development have accelerated in their importance, leading to an emphasis on “back-story” and the development of databases of historically- and geographically-accurate data.

This drive for realism, compelling content, and back-story has come from both imagined and actual warfare scenarios. In the summer of 1990, for example, a computer-based war game called *Operation Internal Look* was used by General Norman Schwarzkopf and his staff at the U.S. Central Military Command to run through scenarios of potential conflict in Iraq. Immediately after the invasion of Kuwait, the function of *Internal Look* changed from virtual to actual: it was now used to run variations of the real combat scenario. Lessons from *Internal Look* subsequently shaped the defensive plan for Operation Desert Shield. Schwarzkopf wrote in his memoirs that “the movements of Iraq’s real-world ground and air forces eerily paralleled the imaginary scenario of the game.”²⁰ Actual intelligence reports were so similar to game dispatches that the fictional reports had to be stamped with a prominent disclaimer: “Exercise Only.”

The flow between simulation and actuality also moves in the other direction. In the drive for realism, back-story, and historical accuracy, *actual* battle scenarios are subsequently *virtualized* – in other words, they are recreated for use in simulations. A case in point is the “Battle of 73 Easting” between the U.S. and Iraqi forces, which took place in the Iraqi desert on 26 February 1991, just three days into the ground war. One month after the battle, work on gathering data for the simulation had

²⁰ General H. Norman Schwarzkopf, *It Doesn’t Take a Hero*, Bantam, 1992.

already begun. The battle was essentially re-staged: troops (many of whom fought in the actual battle) reconstructed the action moment-by-moment, vehicle-by-vehicle. Diaries, written logs, and personal tape recordings were used to introduce subjective experiences – the fears and emotions of the soldiers as well as their actions. Tracks in the sand gave precise traces of movement.²¹

Flowing back and forth across imagined and actual warfare scenarios, the drive for compelling narrative development in simulations influences popular news and entertainment programming. In terms of ideas, personnel, and products, there is already a continuous flow back and forth across the military and news-entertainment realms. Military planners now work closely with industrial partners in team fashion, and in the process, military contracting units have become business organizations. Through increasing alliances with the entertainment industry, research work for high-end military products can be seamlessly integrated with systems in the commercial sector.²²

The Department of Defense has been the major source of long-term funding for high-end computer graphics, visualization technologies, and network infrastructure for over 30 years. Yet since the early 1990s, following the end of the Cold War, the DOD has increased its reliance upon the acquisition of commercially-available items and components, many of which have already been developed in the videogame industry. Since then a deeper collaboration has set in among the military, commercial designers, the entertainment industry, and academic researchers. The mandate of STRICOM (Simulation Training and Instrumentation Command) – the organization that was founded in order to manage and direct the military's simulation efforts – is to leverage non-military industry resources.

The military now develops its own commercial games designed as recruitment devices. A new gaming genre called “serious games” has arisen to fill the gap between entertainment, training, and public relations. Including such games as *America's Army: Operations*, released in 2002, and *USAF: Air Dominance*, in 2004²³, so-called serious games are government-funded promotional products, developed in the commercial sector, that are intended to be used as promotional vehicles, recruitment tools, and educational experiences.

²¹ F. Clifton Berry, Jr., “Re-creating History: The Battle of 73 Easting,” *National Defense*, Nov. 1991, also discussed in Bruce Sterling, “War is Virtual Hell,” *Wired* Vol. 1 No. 1, January 1993 and in Kevin Kelly, “God Games: Memorex Warfare,” *Out of Control*, Addison Wesley, 1994. Cited in Tim Lenoir and Henry Lowood, “Theaters of War: The Military-Entertainment Complex,” in *Kunstkammer, Laboratorium, B_hne-Schaupl_tze des Wissens im 17. Jahrhundert*, eds. Jan Lazardzig, Helmar Schramm, and Ludger Schwarte. Berlin: Walter de Gruyter Publishers, 2003: 432-64. Also at http://www.stanford.edu/dept/HPST/TimLenoir/Publications/Lenoir-Lowood_TheatersOfWar.pdf.

²² See DOD Directives 5000.1 and 5000.2, as cited by Lenoir and Lowood.

²³ “Critical Mass Completes ‘USAF: Air Dominance’ Military Action Flight Simulator,” Austin TX (SPX) Nov 12, 2004, from *Space War Express*, 12 Nov 2004. Thanks to Irving Goh for this forward.

Military simulations are adapted to the commercial game market as commercial videogames are adapted for military purposes – as the videogame industry on the whole is in ascendance. It is now the commercial videogame market that drives the development of graphics and processor hardware. The game industry is reaching (or has already reached) the level of film and television in its importance as a popular entertainment medium in much of the developed world. One could suggest that film and television are fast on their way to becoming special cases of a much larger simulative field.²⁴ It is urgent, then, to understand **the extent to which the content of news media is driven by the demands of simulation.**

Since 1980, the two-cycle (AM/PM) basis for news delivery has been gradually replaced by a relentless 24-hour news delivery cycle that seldom looks back. It is a profit center that demands new and constant dangers for reportage and commodification. It fuels a constant battle for attention-space, where the whole of reality is transformed into a dramatic stage for alluring catastrophe. Here there is no time to remember, because the next crisis – always imminent – demands our full vigilance. Battle simulations, television shows, and interactive games inhabit a mutually-reinforcing system of marketable threats and protections. There is nothing outside of this system, and especially as it is increasingly able to tap into the affective dimension, where danger is *eroticized*.

As simulations flow back and forth across the commercial sector, in various combinations of serious use, entertainment, recruitment, promotion, and proprietary engagement, perhaps “simulation” is becoming less a modality of representation than a mechanism of translation – or at least, a form of incipience or potentiality, moving across various stages of enaction. In new training scenarios, live units are connected to simulation units, allowing a switching back and forth between virtual and real situations – a process that will have analogues in the civilian realm. We are here in the territory of what John Armitage, after Virilio, calls the “logistics of perception management”²⁵ – the realm of spin and “reality control,” where facts, interpretations, and events are mutually shaped to conform to strategic doctrines; where reality is positioned as something that is inherently pliable; and where the public becomes a surface for the production of effects.

The issue is not simulation per se, but the larger historical transformation of the spectacle, in which the processes and forms of simulation have played a role.

²⁴ This statement makes reference to Lev Manovich’s statement that “Born from animation, cinema pushed animation to its periphery, only in the end to become a particular case of animation.” Manovich, p. 302.

²⁵ John Armitage, “Beyond Postmodernism? Paul Virilio’s Hypermodern Cultural Theory,” in Arthur and Marilouise Kroker, eds., *Life in the Wires: The CTHEORY Reader*, CTHEORY Books, 2004, pp. 354-368. Paul Virilio, *War and Cinema: The Logistics of Perception*, trans. Patrick Camiller, Verso, 1989.

A Mobilized and Vigilant Perception

The logics and forms of the real time tracking interface and the distributed interactive simulation – as these are shaped under the demands of warfare and production – have been integrated into all manner of graphic displays, whether used for entertainment, communication, or locationing, by the military, policing, and civilian sectors. They have been integrated into new regimes of entertainment and spectacle.

Fundamental contradictions remain. Brian Holmes embodies these contradictions in his figure of the “flexible personality”: the contemporary individual embedded in a network culture that is a synthesis of, on the one hand, a communicative opportunism, bringing labor and leisure together in a dream of disalienation that stretches back to the 1960s; and on the other hand, an underlying architecture of surveillance and control, made possible by the spread of new technologies.²⁶ With the seemingly boundless opportunity, safety, and convenience that comes with these new technologies, their user is increasingly able to targeted and managed within new control regimes – a mobile focal point of a distributed Panopticon.

As Foucault²⁷ and others have shown, we internalize the condition of surveillance. It enters into the logic of perception, directed at ourselves or at others. We are both origin and object: the one who tracks and who keeps track. These conduits are not particular to the domain of policing, for they not only compel a watchfulness of the state, but a civilian watchfulness, where a suspicious or concerned eye is cast upon one’s self and one’s fellow citizens.

Think of the way that one is compelled to assume a position of extreme vigilance – to “track” or scan rather than simply see – in the reporting of “suspicious activity” at an airport. Looking for such “suspicious activity,” I suddenly realize the most insidious part of the drill: What about *me*? With this realization, I am transformed. I am one the person at Sartre’s keyhole, caught in the act, who knows that he is seen at the moment that he sees. I have now become an object for the gaze of another. Looked at, I look at myself. Concerned that I could be “suspect,” I modify my actions accordingly.

In media-saturated societies, surveillance has gradually been made “friendly” and transformed into spectacle, to the extent that it is no longer a condition to be feared. Rather, it is a condition to be courted: witness the phenomena of reality television, blogs, and webcams, and the rise of the media mise-en-scene as the primary form of social authentication.²⁸ In recent cyber discourses, this “friendly” control is often regarded as self-regulating: we are integral part of systems that self-adjust through

²⁶ Brian Holmes, “Drifting Through the Grid: Psychogeography and Imperialist Infrastructure,” *Springerlin* 3/04, www.springerlin.at. See his writing on “The Flexible Personality” in Brian Holmes, *Hieroglyphs of the Future*, Arkzin, 2002, pp. 106-145.

²⁷ Michel Foucault, *Discipline and Punish*, trans. Alan Sheridan, Penguin, 1977, pp. 195-228.

²⁸ See Peter Weibel, “Pleasure and the Panoptic Principle,” and Ursula Frohne, “Screen Tests: Media Narcissism, Theatricality, and the Internalized Observer” in *[CTRL]SPACE: Rhetorics of Surveillance from Bentham to Big Brother*, Thomas Levin, Ursula Frohne, and Peter Weibel, eds., MIT Press, 2002, pp. 215-219; 253-77.

market dynamics or adaptive behaviors, allowing for the emergence of new forms of maneuver and masquerade. Within new ecologies of mind²⁹, we benefit from machine-human interactions all around us, a pervasive web of shared resources that offers boundless opportunity for identity refashioning. Further: in a database-driven culture of accounting, one needs to appear on the matrices of registration in order to “count.” To be accounted for is to exist.

Perhaps nowhere have the contradictions of communicative opportunism/surveillant precision made more palpable than in new portable wireless devices, especially those that are increasingly “location-aware.” These technologies, along with their semiotics and uses, are serving to weave together **degrees of temporal and spatial specificity**, against the grain of much of the “delocalized” orientation of virtual discourses during the last decade – but perhaps more true to the strategic origins of the cybernetic tradition, which was, after all, concerned with the precise calculation of position.

“Locative” technologies rely on connection to the global positioning system (GPS), launched by the U.S. Department of Defense in 1994. A constellation of 24 satellites that circle the globe, the system works through radio signals sent from satellite transmitters to ground-based receivers, through which precise positions on the earth are determined. The system is continually fine-tuned by US Air Force monitoring stations across the world. GPS capability can now be integrated into a device as small as a wristwatch. When your navigational device has access to a geographic information system (GIS), content items that respond to your location can be retrieved. Such technologies blend the tradition of interactive computer graphics, tracking interfaces, and handheld communications devices. The technology is already visible in new on-board automobile navigation systems such as ATX and OnStar, who can even operate some of your car’s functions remotely (including turning on the speaker phone to eavesdrop). Currently about a quarter of all vehicles at U.S. car rental agencies use some form of GPS technology. And of course, it is already beginning to sweep through the mobile phone market: By the end of the year, the FCC is requiring all U.S. mobile phone providers to be able to pinpoint the exact location of all customers who call 911, and most of these companies are already beginning to roll out GPS-equipped phones in order to be the first to offer new positioning features.³⁰ In the tradition of heads-up displays, various kinds of visual and sensory augmentation will also be possible through new devices that overlay information and graphics on objects and spaces directly in the user’s line of vision.

Tiny transponders or RFID (radio frequency identification) tags – which can be embedded in just about anything, including humans – allow precise locationing of objects within flexible production and distribution systems. They are what allow customers to precisely track the trajectory of their Federal Express package. Gillette has already embedded them in cheap disposable razors, and retailers such as Wal-Mart are requiring all of their suppliers to embed these RF tags in their shipments for decoding. A recent ad for IBM On Demand Business reads: “Tens of thousands of parts, all perfectly choreographed. Every single day, an integrated wireless tracking

²⁹ See Gregory Bateson, *Steps to an Ecology of Mind*, University of Chicago Press, 2000, p. 466.

³⁰ See William J. Mitchell, *Me++: The Cyborg Self and the Networked City*, MIT Press, 2003, pp. 113-127, and Matthew Brzezinski, *Fortress America*, Bantam, 2004, p. 63-64.

system helps Audi plants respond in real time to shifts in global demand.”³¹ The military was of course an early pioneer of RFID.

The potential of GPS-enabled devices, ubiquitous transponders, and other locationing technologies present a world where every object and human is tagged with information specifications including history and position – a world of information overlays that is no longer virtual but wedded to objects, places, and positions, and no longer fully simulative since it facilitates an active trafficking between model and reality. Such location-specific technology combines information, movement, and precise positioning – knowing “where” as well as “what.”

These technologies and their discourses aim to increase productivity, agility, and awareness, yet they vastly increase the tracking capabilities of marketing and management regimes. You are able to get what you want faster, but your behavior is tracked and analyzed by marketers who also can provide this information to police and military sources, who increasingly depend upon the business sector for a large part of their intelligence. (After the carnage of the Civil War, the U.S. military was prohibited from future interventions into the domestic realm. Since most of the spy satellites are owned by the military, the military “outsources” some of its domestic intelligence needs to commercial satellite providers, while relying on data gathered through the private sector on a number of fronts, especially to meet the sudden growth in intelligence demands after 9/11.) Information from buying habits, travel locations, and audience demographics can be integrated into one comprehensive system, which aims to target consumers at the one-to-one level, offering individually-tailored enticements. Tracked, the user becomes a target within the operational interfaces of the marketing worlds, into whose technologies state surveillance is outsourced.

The paradigm is already in place in new regimes of production, which aim to narrow the intervals between conception, manufacturing, distribution, and consumption. Aiming toward instantaneity in shopping and media-entertainment development, they shrink the delays between detecting an audience pattern and formatting a new enticement that can address it.

Such technologies arise out of, and facilitate, **maneuvers of strategic positionality** – maneuvers that dervie from the tradition of operational media. With such impulses, one needs to account for a moving self or object in the most precise terms as to assert control over it, to manage it, lest it become unruly, unproductive, unsafe, or inconvenient. It is to assert power, whether over ourselves or others: it is to endeavor to know more than the other; to put the other in a position of subservience; to have the “edge” over the other or the self (self-discipline). Propelled by a libidinous, suspicious, and supervisory gaze, the object is that which is to be managed or owned. It involves escalating time pressures contoured under an economy of desire and vigilance, moving toward a reduction of the intervals between detection and engagement, or desire and its attainment.

This form of operationally-driven form of mobilized and vigilant perception – which we can refer to as **tracking** – reifies what Virilio calls the “being of the path.” It is a

³¹ As reproduced in *Wired*, Dec 2004, p. 43. For explanations of RFID, see Mitchell, *Me++*, pp. 113-127, and Brzezinski, *Fortress America*, Bantam, 2004, p. 78-81. Applied Digital Solutions experiments with RF tags for humans and they are already injected into humans and animals.

pathway that is wholly identified with the subject and the object in motion.³² However, unlike Virilio's emphasis on its lack of referentiality, this tracking-path is filled with signification: it serves to invest movement with meaning, as both a surface of action-inscription and an activity of action-inscription. It offers a semiotics that engages with continuity, understanding a moving object not as fixed but in formation – an “inform” on its way to coalescing as a determinate thing, and which exists in a dynamic between passage and construction.³³

Yet at the same time that tracking is occupied with movement and its quantification, it is occupied with precise categorical location – **a precise positionality on a geo-temporal-identificatory grid**. The viewer-consumer is targeted within a demographic or marketing database. The tracked object is placed on a geographical grid, a temporal grid, or an identity matrix – one or another classification scheme or database-driven identity assessment. Following Foucault, these logics coalesce into regulatory mechanisms. They carry with them a way of modulating and constructing discourses that define a field of objects and a subject adequate to know them. They help form a model for thought and identification and provide a source of new concepts and metaphors. They constitute a form of self-reference, or self-medialization, which is defined in response to a desired and feared Other. Internalizing such logics of classification, the tracking/tracked subject replaces a subjective evaluation with an economic or threat index, for example, or reifies positionality in order to conform to access demands. It is a calculus of ontological division.

While tracking is fundamentally about **the detection and strategic codification of movement**, then, it at the same time serves as a *reaffirmation* of positionality and place. It is about a semiotics of mobility, yet is also **a fundamental reassertion of temporal and locational specificity**.

Tracking leads to the “arrest” of its object in a matrix of signification – a process we know in terms of **targeting**. Through the post-perspectival guidelines of the operational interface, the suspicious and acquisitive gaze fixes its sights on its object-target, toward the goal of its elimination or consumption.

Such a process involves three fundamental needs: security, productivity, and convenient access to commodity. In this way surveillance, efficacy, and consumerism are blended. Networks of pleasure and paranoia are harnessed in order to produce an awareness of **endangered enticement** and move a subject to action – that is, to consume material, virtual, or discursive objects, whether positioned in terms of security or libidinous satisfaction. In the relatively wealthy regions of the world, citizens are compelled to believe in a cause (democracy) and dedicate themselves to a “way of life” (shopping). The expression “defending our way of life” embodies the twin engines of desire and fear, attraction and protection. This means defending the right to acquire as the very means of “freedom of mobility.” It means defending the right to

³² Virilio, *Open Sky*, p. 130.

³³ Reading through Bergson and Deleuze, Brian Massumi offers important new theoretical tools for thinking movement today, at the intersection of cultural studies and science studies. My thinking on tracking, as well as on the role of affect, owes a great debt to his work. See Brian Massumi, *Parables for the Virtual*, Duke University Press, 2002.

own and circulate objects, and to constitute oneself as an object to be marketed. Through an interlocking mechanism of selling and consuming, looking and buying, one grazes along endless arrays of enticements offered up for the desirous and acquiring eye – enticements that are aimed at the replication of desire in the eyes of others. Such a mechanism becomes the very condition of mobility. It is a process of defining the self in terms of an unbounded menagerie of attractions, which leaves it forever lacking.

We can say that whenever there is surveillance, there is shopping, and vice-versa: the *consumer polices* and the *police desires*. Conquer/consume/protect, desire/fire: the operational gaze is a complex of offensive and defensive contradictions. *Mon d_sir est la sur quoi je tire.*³⁴

In the end, the workings of operational mediation – borne of a formal programming logic, of the primacy of pattern over presence, and of the agonistic calculus of tactics and maneuver – cannot be understood by formal linguistic meanings alone. It calls for us to recognize a dimension of **affect**: an axis of intensity that underlies the symbolic register, continually confounding politics of representation. To attempt to accommodate this dimension is to enter the domain of contradictions, where violence can be both horrific and pleasurable, and where surveillance can be voyeurism. It is the realm where one secretly thrills to the potential spectacle of crime, and where danger is not only avoided but also secretly courted. It is the realm of the disaster imaginary and the criminal unconscious, played out in the “adventure factor” in military recruitment advertisements, immersive games, and extreme sports. It is the “morbid curiosity” we feel when, present in the aftermath of a violent act, we have to look, but we don’t want to see. It requires the acknowledgement of danger as a constitutive element of attraction: the unpredictable, dangerous web of intrigue that pulls us into the narrative world.

At the extreme case, we are in the dimension of the Lacanian Real: the hidden fantasmatic underside of our sense of reality, which cannot be assimilated into the symbolic order of language or into the domain of shared images. It provides the fundamental support of reality, yet it cannot be incorporated into it. It is the *jouissance* felt in the catastrophe and in the construction of the sublime object or the impossible-real object of desire.³⁵

In addition to the *meaning* of a phenomenon, one must endeavor to account for its *motivating power*. Meaning is often pressed into service of an even more fundamental intensity of belief. Intensities will always trump semantics – they will mold meanings to their own ends. Although this dimension of intensity and affective engagement is not representational, it is, following Deleuze, “gradated” by representation. The challenge is to develop a cultural vocabulary specific to it.³⁶

³⁴ “My desire is where I’m firing at.” Guillaume Appollinaire, from “Desir” in “Lueurs des Tirs,” *Calligrammes*, Paris, 1918, as quoted in Virilio, *War and Cinema*, p. 14-15.

³⁵ Jacques Lacan, *The Four Fundamental Concepts of Psychoanalysis*, trans. Alan Sheridan, W. W. Norton, 1978. Slavoj Zizek, *Welcome to the Desert of the Real*, Verso, 2002.

³⁶ For an important call for a vocabulary of affect in cultural studies, see Brian Massumi, op. cit. The work of Manuel DeLanda has also been exemplary in this regard. See *Under Fire.1: The*

Contoured under the aegis of impending danger and inefficiency, we are talking about a form of perception and codification that arises in the contemporary demand for increased vigilance – but in such a way as to produce the vigilant perceiver as a site for the production of desire. It situates the body as a receptive site for new fears and attractions. Such “positioning” and simulation impulses are visible everywhere, as part of a machine-aided process of disciplinary attentiveness, embodied in practice, that is bound up within the demands of a new production and security regime.³⁷

The challenge is not only to endeavor to understand this operational construct, but to understand the forms of opposition to it that are emerging in the globalized world. For the operational is only one “window” onto reality. There are other orientations that counter it, and for which, by its very nature, it is unable to account. It is powerless to envision terms of engagement that do not operate according to its logics. It can only assign them to the realm of the barbaric or irrational: that which lies outside of its license on reason.³⁸

The eruption of violence is one result of the lack of political process within which these alternative constructs can be heard.

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Organization and Representation of Violence, ed. Jordan Crandall, Witte de With, 2004, p. 68-73.

³⁷ For considerations of disciplinary attentiveness in Modernity, the seminal work is Jonathan Crary, *Suspensions of Perception: Attention, Spectacle, and Modern Culture*, MIT Press, 1999.

³⁸ See Edward Said, *Orientalism*, Pantheon: 1978.